AMC Pamphlet
AMCP 385-66

SAFETY DIGEST

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385-66

JULY
1965

UNIV. OF FLORIDA LIBS.
DOCUMENTS
DEPARTMENT
U.S. DEPOSITORY

National Safety Council

Presents this

Award of Merit

to

Safety Digest

in recognition of
exceptional service
In the Promotion of Safety
1965

Class III

I Howard Pyle
President, National Safety Council

Kalliopee Malagris
Chairman, Judges Committee

EMPLOYEE PUBLICATIONS
NEWSLETTER
NATIONAL SAFETY COUNCIL
425 North Michigan Avenue
Chicago, Illinois 60611

MAY-JUNE 1965
Topy Malagaris, Editor

NATIONAL SAFETY COUNCIL
425 NO MICHIGAN AVE.
CHICAGO, ILLINOIS 60611
TELEPHONE | COOK 312
527-4800

April 7, 1965

Mr. Fred Bishoff
Chief, Safety Division
Safety Digest
U. S. Army Materiel Command
Washington, D. C. 20315

Dear Mr. Bishoff:

I am most happy to inform you that your publication has been selected a winner in the National Safety Council's 1965 Employee Publications Contest.

A layout of your winning entry will be used in the May-June issue of the Employee Publications Newsletter.

The judges' selections are very important to us here at the Council because these winners set the standards for future safety articles.

Award certificates will be mailed to you near the end of this month.

Again, congratulations.

Sincerely,

Topy Malagaris
Editor
Employee Publications Newsletter

TM:ce

18 Publications Take Contest Honors

Miss Jean Smith **Miss Saree Halevy** **Mrs. Yaffa Draznin**

Eighteen employee publications have won National Safety Council Awards of Merit for Exceptional Service to Safety during 1964.

Winners were selected from 80 entries by three judges from the Industrial Editors Association of Chicago. The judges, Mrs. Yaffa Draznin, Editor CHICAGO POLICE STAR, Chicago Police Department; Miss Saree Halevy, Advertising Production Manager, AMERICAN SURGICAL DEALER, American Surgical Trade Association; and Miss Jean Smith, Public Relations Senior Assistant, BETWEEN THE LINES, Illinois Natural Gas Pipeline Co.

Judging was held at Council headquarters in Chicago.

The complete list of winners and samples of safety material they ran during 1964 appear on the following pages of this issue.

Categories of the award were (1) magazines, (2) newspapers, (3) safety bulletins, mimeographed, and miscellaneous, (4) supervisory, engineering and specialized.

Impact, appropriateness, creativity and originality were criteria emphasized by the judges.

The judges had definite views as to why they selected particular entries as winners. Some of the views gleaned from their worksheet:

"Employee participation and pictures good; originality shown."

"Factual; has impact."

"Good layout; original copy."

"Stories talk to readers; varied approaches."

"Dramatic; stories well written; good employee tie-in."

"Safety in spotlight in all issues."

"Good leads, copy, layout; easy reading."

"Headlines good; writing crisp; leads inviting."

"Effective use of pictures."

"Impressive."

"Good how-to-avoid accident stories."

The judges also had criticisms to make of some entries:

"Run-of-the-mill stories."

"Too much copy may stop readers."

"Cluttered."

"Not much impact; not much employee interest."

"Nothing on how to prevent accidents."

"A little too cute."

"Talks down to readers."

"Uninspired, dull."

The judges felt that overall the entries had once again made a definite contribution to safety. But, while company publications probably devote more space and creativity to safety promotion than any other kind, there is still much to be done.

The Winners:

Magazines

Safety Digest
American Agricultural Chemical Co.
Pierce, Fla.
T. S. Aggella, Editor

Wisconsin Telephone News
Wisconsin Telephone Co.
Milwaukee, Wis.
Carl Schrank, Information Supervisor

Weirton Employees Bulletin
Weirton Steel Co.
Weirton, W. Va.
Stephen E. Poatl, Editor

The Transmitter
Chesapeake and Potomac Telephone Companies
Washington, D.C.
Carl H. Claudy, Jr., Editor

Telephone Review
New York Telephone Co.
New York, N.Y.
Edward Oxford, Editor

Newspapers

Kearnygram
Western Electric Co.
Kearny, N.J.
A. Joseph Parrillo, Editor

Chambers Works
E.I. du Pont de Nemours & Co.
Deepwater, N.J.
Walter Smith, Public Relations

The CF&I Blast
Colorado Fuel and Iron Corp.
Pueblo, Colo.
Francola M. Genty, Editor

Miscellani
Hercules Powder Co.
Magna, Utah
Jack F. DeMann, Editor

Chrysler Views
Detroit, Mich.
Alfred J. Knight, Manager, Publications

Bulletins, Mimeographed & Misc.

Focus on PCW Safety
Philadelphia Gas Works
Philadelphia, Pa.
Alexander Pierson, Safety Engineer

Safety Record
Cities Service Gas Co.
Oklahoma, Okla.
L. H. Barfoot, Employee Services Manager

Junior Titanoxer
National Lead Co.
South Amboy, N.J.
Paul Riley, Editor

St. Louis Titanox Shift Calendar for 1965
National Lead Co.
St. Louis, Mo.
Richard A. Avetta, Editor

Supervisory, Engineering & Specialized

Safety Digest
U.S. Army Materiel Command
Washington, D.C.
Fred Bishoff, Chief, Safety Division

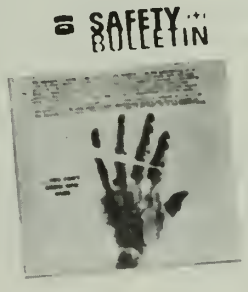
Safety Supervisor
Lumbermens Mutual Casualty Co.
Chicago, Ill.
James W. Smirles, Editor

Safety Bulletin
Bethlehem Steel Corp.
Bethlehem, Pa.
F. R. Barnako, Manager, Compensation and Safety

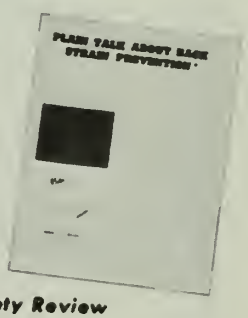
Safety Review
Dept. of the Navy
Office of Industrial Relations
Washington, D.C.
Alan Turnbull, Assistant Director

National Safety Council
Presents this
Award of Merit
to
South Publishing Co.
in recognition of
exceptional service
in the Promotion of Safety

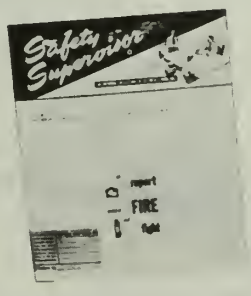
Supervisory, Engineering, Specialized



Safety Bulletin



Safety Review



Safety Supervisor

Safety Digest

HEADQUARTERS
UNITED STATES ARMY MATERIEL COMMAND
WASHINGTON, D.C. 20315

AMC Pamphlet
385-66

JULY 1965

The Safety Digest is an AMC Pamphlet prepared by the Safety Division, Headquarters, U. S. Army Materiel Command. Its purpose is to disseminate information which can materially influence and improve safety programs at all Command establishments.

Articles are included to supplement technical knowledge as well as practical knowledge gained through experience. They provide a basis for the further refinement of safety measures already incorporated in operating procedures and process layout. To achieve maximum effectiveness, the Safety Digest should be given widespread circulation at each AMC establishment.

Articles appearing in the Safety Digest are unclassified and are not copyrighted. They may be reproduced as desired in order to bring pertinent accident prevention information to the attention of all employees. The Army Materiel Command Safety Digest should be given a credit line when articles are extracted.

Unclassified material believed to be of interest or benefit to other establishments is welcome for publication in the Safety Digest. Please send articles for review to: U. S. Army Materiel Command Field Safety Agency, Charlestown, Indiana. If possible, include pictures, charts, drawings, and illustrations that clarify and heighten interest in your presentation.

SELWYN D. SMITH, JR.
Major General, USA
Chief of Staff

OFFICIAL:

STANLEY J. SAWICKI
Colonel, GS
Chief, Administrative Office

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AMC SAFETY DIGEST SELECTED FOR NSC AWARD

The National Safety Council has selected the U. S. Army Materiel Command Safety Digest as a winner in the 1965 Employee Publications Contest. The NSC Award of Merit and a lay-out of our winning entry, used in the May-June issue of the "Employee Publications Newsletter," are shown on the inside cover and facing page.

In reviewing publications entered in the contest, the judges laid great stress on employee participation. The AMC Safety Digest could not have won the coveted award without your excellent contributions. We thank those who have contributed articles, pictures, and graphics in the past; please keep them coming.

In order to keep up the quality of the Safety Digest, there is a continuing need for contributions of articles slanted towards safety. This is your Safety Digest. It is a means for you to help in the prevention of accidents, not only at your installation, but wherever the U. S. Army Materiel Command operates. Your ideas are vital to the promotion of safety. Why not contribute them in an article?

Articles may be forwarded for review to the U. S. Army Materiel Command Field Safety Agency, Charlestown, Indiana 47111. Illustrators and artists who wish to contribute front cover material and cartoons slanted toward safety should forward them to the U. S. Army Materiel Command, ATTN: Editor, Safety Digest, AMCAD-SR, Washington, D. C. 20315.

AMC SAFETY SCHOOL FY-1966 COURSES ANNOUNCED

The AMC Field Safety Agency recently distributed information on the resident courses that will be conducted during FY1966 by the AMC Safety School at Charlestown, Indiana. A total of 18 classes in eight broad subject areas will be taught between 30 August 1965 and 20 May 1966.

The AMC Safety School schedule for FY1966 will include:

Introductory Safety - One Class

Industrial Safety - Four Classes

Munitions Safety - Four Classes

Guided Missile & Rocket Safety - One Class

Motor Vehicle Safety - Three Classes

Installation Safety Management - Three Classes

Nuclear Weapons Safety - One Class

Applied Safety in Industrial Health and Hygiene - One Class

The Industrial Safety and Munitions Safety courses last two weeks each and the Nuclear Weapons Safety class fills four days. All other courses are of one week duration.

The subject matter taught in the AMC Safety School is being revised continually to incorporate information on the latest technical developments that affect the safety of AMC personnel and property.

Estimates of space requirements received by the AMC Field Safety Agency indicated that all FY1966 classes will be filled to capacity.

Spaces for FY1966 classes were allocated by the AMC Field Safety Agency on 15 May 1965. AMC subordinate commands, installations and activities will use this information to schedule attendance for the various courses.

Between their periods of instruction in the resident courses the staff of the AMC Safety School is kept busy with field training courses they take to AMC installations and activities.

SAFETY IN ELECTRONIC ULTRASONIC CLEANING

Advances in the field of ultrasonics (energy vibrations above 20,000 cycles per second) have resulted in the development of electronic ultrasonic cleaning equipment. This equipment has been widely accepted for its cleaning abilities in industrial and research activities.

Ultrasonic generators are used to create oscillations either directly, as in the case of the mechanical or air-operated generators, or by creating electrical waves that can be changed to mechanical vibrations through a "transducer," as in electronic types. In most mechanical types, the generator and transducer are combined with a motor or compressed air which acts as its generator or power source.

The most common generator used with electronic ultrasonic-cleaning devices is the 60-cycle AC-powered oscillator. This device uses standard 110-volt current at 60 cycles and converts it to a current and a frequency that is most practical for cleaning purposes. This generally falls in one of the following groups: 25 to 30 KC, 40 to 50 KC, 90 to 100 KC, and 400 KC.

The second major part of the ultrasonic cleaning equipment is the "transducerized tank." This is a cleaning tank or container of a size and shape best fitted to perform the desired cleaning task. "Ultrasonic transducers" have been installed on this tank. The ultrasonic transducer is a device to convert the electrical impulses from the generator into mechanical vibrations of the same frequency.

The transducers are coupled to the tank in order to transmit the mechanical energy into the liquid in the tank. The transmission of energy through the cleaning liquid has been given the name of "cavitation." Cavitation is the rapid formation and sudden collapse of many thousands of microscopic bubbles in the cleaning liquid when it is subjected to the ultrasonic energy transmitted by the transducers through the tank. The implosion of these bubbles during the pressure reduction phase of the cycle results in a powerful scrubbing action that forces contaminants from surfaces and out of cracks and flushes them away from the article being cleaned.

Although the cleaning process is heavily dependent upon cavitation to perform its results, it must also have a good liquid media through which to work. Generally use is made of a solvent or a detergent that has been specifically compounded to provide maximum cavitations.

Physiological Hazards

From this resume of the fundamentals of ultrasonic cleaners, four possible physiological hazards become apparent. These are ultrasonic energy, noise, solvents, and electrical energy.

Use of ultrasonic generators of high power (for example, cleaning work involving energy levels up to 10 watts per square centimeter with a total power of 500-1,000 watts for the equipment) requires safety precautions. If energy of sufficient intensity in the ultrasonic range is applied to the body or to parts of the body for long enough periods of time, the temperature of body tissue may be raised sufficiently to produce damage. Generally this level of energy is not reached when transmission is through air between the generator and the body because of the high attenuation of ultrasonic energy in air. Only with exceedingly powerful generators would air transmission be sufficient to be of practical concern.

In the case of liquid or solid transmission of ultrasonic energy an entirely different situation exists. Excessive amounts of ultrasonic energy can be transmitted to the body tissues by direct contact with the generating source or by liquid baths containing such energy. For this reason immersion of the hands in the liquid of ultrasonic cleaners and/or direct contact with generator parts while the unit is in operation should be avoided. Parts to be cleaned should be held in solution by basket, hooks, wire - not by hands.

Noise from ultrasonic cleaning systems is ordinary sound energy occurring at frequencies in the upper audible range or slightly above the audible range. Ultrasonic noise is no different in nature or energy content from noise generated by other industrial equipment such as grinders and sanders. Ultrasonic noise is not electromagnetic and is not akin to atomic or nuclear radiation in any way.

There are two main sources of noise in an ultrasonic tank. The first is the sound radiated directly into the air by the transducer or by the tank structure. The second is the noise produced by cavitation or bubble resonance in the liquid. The generally recognized criteria regarding sound hazards apply. The amount of audible noise produced by an ultrasonic generator will be influenced both by the power and frequency of the generator and by the type of installation. Because of the latter factor, great variability from location to location is possible, even where basic equipment is

identical; therefore, the practical hazard from audible noise should be determined by ordinary noise measurements at any installation. At Army Materiel Command installations where noise is in excess of acceptable levels, protective devices should be issued to operators in accordance with the provisions of AMCR 385-11.

A solvent must be employed in order to perform an adequate cleaning operation. The usual precautions should be observed depending on the toxicity, flammability or other hazard of the solvent used. Particular care should be taken to prevent the use of carbon tetrachloride, which may decompose to phosgene when under ultrasonic influence.

Electrical power supplies developing as high as 10,000 volts are utilized to provide the necessary drive for the cleaning. In essence, high voltages are present in ultrasonic generators, and as such, should be respected.

Individuals servicing ultrasonic generators should obey the following rules:

1. Do not service or adjust alone. Under no circumstances should any person reach within, or enter into, the generator for any reason without the immediate presence of another person capable of rendering aid.

2. Keep away from live circuits. Do not change wiring or make adjustments with the high voltage supply on. Under no circumstances should any person be permitted to reach within, or in any manner gain access to any cubicle with interlocked doors closed, or when power supply switches are closed.

3. Do not tamper with interlocks. Under no circumstances should any access door interlock, or other safety interlock, be removed or short-circuited.

4. Do not depend on indicating lamps. The fact that indicating lamps are off is no assurance that power is off. The lamps may be burned out.

5. Beware of charged capacitors. Dangerous voltages may exist even with power shut off due to charges retained by capacitors.

6. Insure unit is properly grounded.

Ultrasonic cleaners are made relatively safe by engineering at the time of design, but there are hazards inherent in this type of equipment. Personnel who are aware of these hazards and who make use of the necessary precautions can operate the equipment in such a manner as to prevent accidents and injuries.

SELF-CLOSING STOPS FOR ROLLER CONVEYORS

The Aerojet-General Corporation has developed two types of self-closing stops that prevent material from falling off the end of roller conveyors. The firm uses the stops on conveyors, transfer carts, and hydraulic lift tables where loaded rocket motors are transferred.

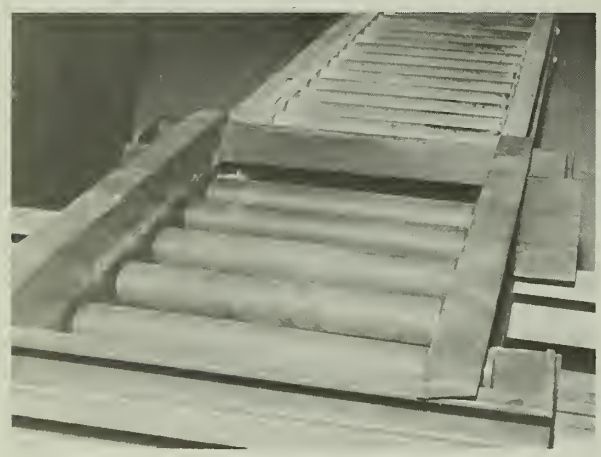


Photo 1

Photo 2

Photos 1 and 2 show a foot-operated stop. Unless it is depressed by foot or hand pressure the stop is held in place by the counterweights. The counterweights are located outside and below the level af the side rails and do not interfere with movement of material on the conveyor.

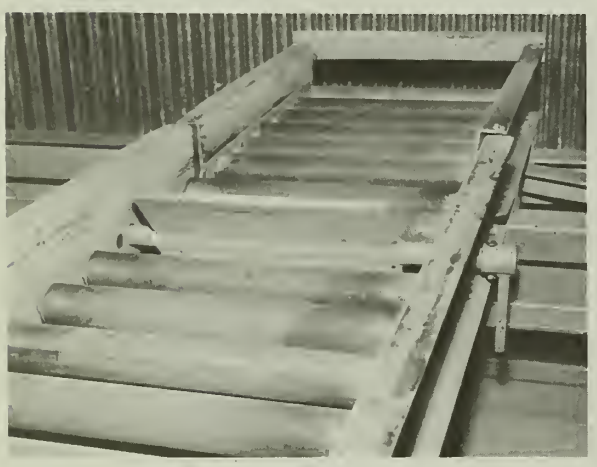


Photo 3

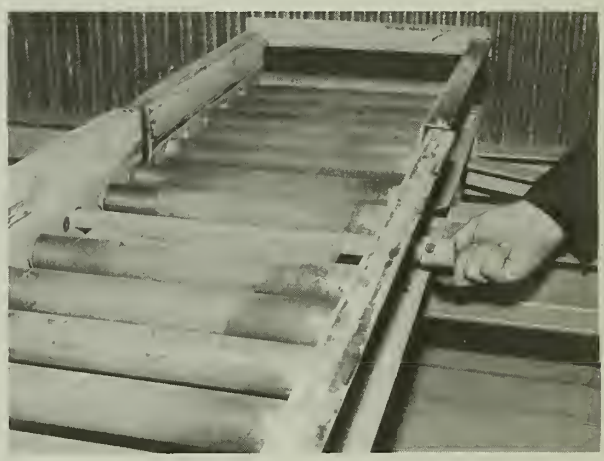


Photo 4

Photos 3 and 4 show a hand-operated stop that remains closed except when it is held down by the lever. The Aerojet-General Corporation has found that a longer lever than the one pictured provides easier operation.

FLAMMABILITY OF VAPOR AND GASES

Mr. Burton Custer, Safety Engineer, U. S. Army Aeronautical Depot Maintenance Center has suggested expansion of information on Flammability of Vapor and Gases appearing in the January 1965 Safety Digest (AMC Pamphlet 385-63). Suggested for additional discussion were: (a) information relating to calculation of the volume of the "leanest" explosive or flammable mixture, and (b) more explicit qualification of statements concerning temperature above which a flammable mixture of styrene vapor in air will not be formed.

Because close control over conditions is difficult to achieve, a large factor of safety should be used in calculating the amount of ventilation required to preclude vapor-air mixtures in the flammable range. A maximum concentration equal to 25 percent of the lower explosive limit is recommended. On this basis, ventilation requirements are determined as follows:

a. Volume of vapor from evaporation of one gallon of solvent (in feet^3) = $\frac{8.33 \times \text{specifc gravity of the solvent}}{0.075 \times \text{vapor density of the solvent vapor}}$

where: 8.33 is the weight of one gallon of water (in pounds)
0.075 is the weight of one cubic foot of air (in pounds)

b. Volume of "leanest" explosive mixture = $\frac{V \times 100}{LEL}$

where: V is volume of vapor (in cubic feet)
LEL is the lower explosive limit of vapor (in percent by volume)

Example: Calculate ventilation required for equipment in which one gallon of styrene is evaporated per hour. From "a" and "b" above:

Volume of vapor from evaporation of one gallon of styrene = $\frac{8.33 \times 0.9}{0.075 \times 3.60} = 27.8$ cubic feet

Volume of "leanest" explosive mixture = $\frac{27.8 \times 100}{1.1} = 2530$ cubic feet

Required ventilation = $\frac{\text{Volume of "leanest" explosive mixture}}{0.25} =$

$\frac{2530}{0.25} = 10{,}100$ cubic feet of air per hour

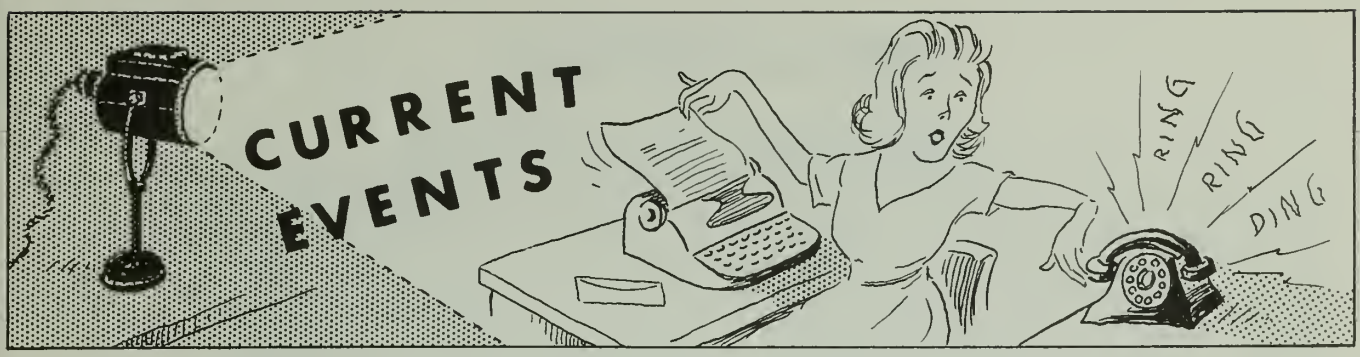
The January 1965 Safety Digest contained a statement to the effect that styrene vapor will not form flammable mixtures with air at temperatures above 66-degrees centigrade, if the air is saturated with the vapor. It should be realized that except for confined spaces wherein equilibrium exists, saturation of the atmosphere is likely to exist only near the surface of the solvent liquid. At some more distant point, a vapor-air mixture within the flammability range may be present.

A safety measure not included in the list appearing in the January 1965 Safety Digest is to blanket flammable liquids with inert gases.

BACKYARD POISON

A surprising number of plants found in homes, gardens, and even school flower boxes are extremely poisonous. According to John M. Kingsburg, author of "Poisonous Plants of the United States and Canada," more than 700 species of plants are known to have caused death or illness. The U. S. Public Health Service reports that about 12,000 children each year ingest potentially poisonous plants. Here are some of the common and seemingly innocuous plants (and their toxic parts) that you wouldn't suspect: oleander leaves and branches; all parts of the dieffenbachia; rosary pea and castor bean seeds; iris stems, rhubarb leaf blade; daphne berries; wisteria seeds and pods; and all parts of laurels, rhododendron, and azaleas.

"Safety Education" - A National Safety Council Publication



ONE SHEET OF PAPER DISABLES WORKER

A young woman was typing the last letters on a sheet of paper when the telephone rang. She reached for the receiver with one hand and pulled the freshly completed page from the typewriter with the other hand. Her right hand swung close enough to bring the corner of the paper into contact with her right eye.

Though the incident was momentarily disconcerting, the woman dismissed it as of no consequence. She worked the rest of the day without mentioning it. At home her eye became painful and she removed her contact lenses. The next morning her eye was red, swollen, and watering. She went to her eye doctor who diagnosed her injury as traumatic corneal abrasions of the right eye. He prescribed medication and rest; she was absent from work for three days.

LOOSE TELEPHONE GRIP LEADS TO DISABILITY

An employee was busy at his desk when the telephone rang on a small table behind him. He turned to the left and picked up the receiver with his left hand. His grip was loose and it slipped from his hand. He made a violent effort to catch the receiver with his right hand. The little finger of his clutching hand struck sharply against the arm of his chair.

The employee reported his painfully injured finger to the installation dispensary. An X-ray examination revealed that a bone in the finger was fractured. On following days he was sent to a U. S. Public Health Service Office and to a hospital for further examinations. A week after the accident he was admitted to a second hospital for surgery on the injured finger.

FINGER VS POWER SAW

Two construction subcontractor employees were preparing to cut 4" X 4" handrail posts to a required length and angle. They set up a jig on a gasoline-operated jump (underslung cutoff) saw, and then attempted to start the motor. The saw had remained outside under a plastic cover for several cold days and humidity from melting snow made the engine balky. Almost 20 minutes were required to get the motor into smooth enough operation to saw the first board.

When the workmen measured the first post, they found it was cut one-fourth inch short. They decided to reset the jig. Because the engine was so hard to start and the saw could not be stopped without turning off the engine they left them running.

The foreman, who was standing to the right of the saw, turned away to place the short post on the ground. The second worker took his hammer and started to pull the first of the 16-penny nails that had been used to fasten the jig in place on the saw table. As he turned back, the foreman saw that a sudden movement might bring his helper's hand into contact with the unguarded tip of the saw that extended three-fourths inch above the table top. He started to cry out a warning but he was too late.

The nail pulled much easier than the worker had expected. His right hand came back suddenly and just far enough to come into contact with the saw. His index finger was cut deeply near the middle joint. His injuries, described by the doctor as an incomplete amputation, caused him to be absent from work for several days.

The subcontractor foreman put into effect the following measures to prevent similar accidents:

1. Men under his supervision would not be allowed to adjust or repair equipment while it was operating.

2. Work would be planned carefully and the workers affected would be furnished information on the work plan.

3. Workmen would be given thorough instructions concerning job-related hazards.

4. The blade of the underslung cutoff saw would be reset to make it recede below the table top when the foot treadle was released.

5. A guard would be installed on the saw.

PRESENT-DAY JACK FALLS HARD

The young man was a member of a contractor's crew that was doing a variety of planting in a magazine area. His immediate task was to spread fertilizer on the soil covers of igloos, and he was working alone but not far away from other employees. He tipped two 50-pound bags of fertilizer off the bed of his stake-body truck on to his right shoulder, took a bucket in his left hand, and started for the top of an igloo.

He walked up a sloping concrete wall as far as he could go. When it became too steep, he stepped off on the grass-covered slope. The ground was slick from frost and his feet slipped out from under him before he finished two steps. He came down in a sitting position with the 100 pounds of fertilizer still on his shoulder. The burden caused him to snap forward, and he rolled in an effort to get the weight off him. The fertilizer fell over the edge of the wall on to the igloo apron and the man fell on top of it.

The fall knocked the breath out of the young man. After a bit he recovered enough to get to the truck and drive to his fellow workers to seek help. His lower back was extremely painful, and after examination he was hospitalized for treatment. It was estimated that he would be away from work for 90 days because of his injuries, which were described as a compression with fragmentations of a vertebra.

The injured man, along with all the other workers in his group, had previously been instructed on safe methods for lifting and carrying heavy loads. The contractor made it clear that, in the future, fertilizer would be taken to the top of igloos in buckets rather than the 50-pound bags. Employees would walk up the gentlest available slope. They would be trained not to take hazardous shortcuts while doing their work and would be warned of the dangers of working on slippery and elevated surfaces.

AUTOMATIC LOCKING MECHANISM MADE INOPERATIVE

A 39-year-old electrician was attaching an electrical line to the upper crossarm on a freshly installed 29-foot power pole. He had been raised to his position near the pole top in the basket of a hydraulic "skylift", that was mounted on the bed of a 2 1/2-ton stake truck. The skylift basket was in contact with the still bare lower crossarm.

While the man worked, there occurred a reduction in the pressure on the hydraulic lift mechanism. Suddenly the telescoping boom began to lower. This action increased the pressure of the basket against the crossarm. The wood was new, strong, and well fastened, and it held firmly against the pressure. Its own weight and its load caused the basket to pivot above its supporting axis until one end came to rest against the boom.

The sudden sharp tilt of the basket caused the workman to fall free into the air 24 feet above the ground. On his way down his left hip struck the edge of the truck. He landed on the grass-covered ground a few feet from the base of the pole. His left wrist was fractured and there were contusions on his left hip. He was hospitalized for several days.

An investigation revealed that the automatic locking mechanism on the basket arm had been rendered inoperative some time previously with a heavy copper wire. Had this safety lock been free to operate, it should have prevented the basket arm from pivoting above the axis of the lift boom.

Corrective measures included the adoption of an effective action by supervisors to inspect the equipment each week to make certain that all safety devices were in working order.

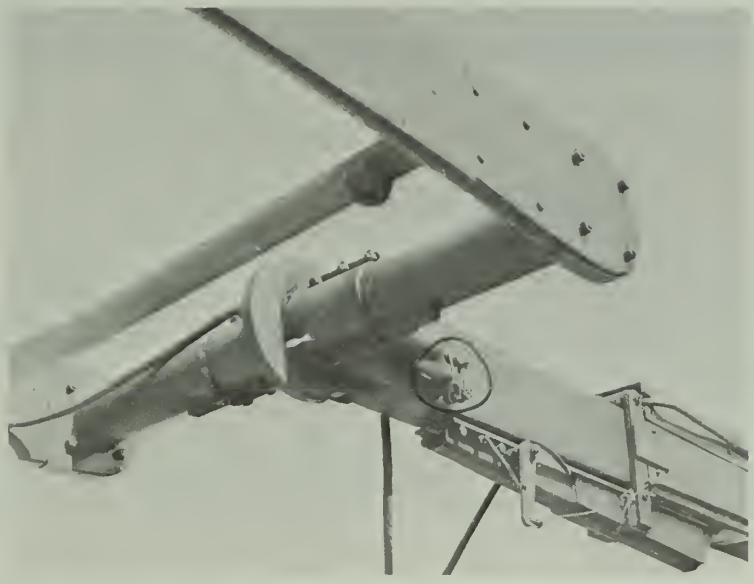


Photo #1

Heavy copper wire prevented operation of the hydraulic locking mechanism on skylift basket arm. When the hydraulic pressure dropped this made it possible for the basket to pivot above the axis of the lift boom.

Photo #2

The sudden tilt of the pivoting basket caused the electrician to fall 24 feet. He struck the side of the truck during his fall. Crossed tools on the ground show where he landed near the far side of the truck.

TEN COMMANDMENTS OF SAFETY FOR SUPERVISORS

Safety Office
Fort Wingate Army Depot

1. You are a supervisor and thus, in a sense, have two families. Care for your people at work as you care for your people at home. Be sure each of your men understands and accepts his personal responsibility for safety.

2. Know the rules of safety that apply to the work you supervise. Never let it be said that one of your men was injured because you were not aware of the precautions required on his job.

3. Anticipate the risks that may arise from changes in equipment or methods. Make use of the expert safety advice that is available to help you guard against such new hazards.

4. Encourage your personnel to discuss with you the hazards of their work. No job should proceed where a question of safety remains unanswered. When you are receptive to the ideas of your workers, you tap a source of first-hand knowledge that will help you prevent needless loss and suffering.

5. Instruct your personnel to work safely, as you would guide and counsel your family at home - with persistence and patience.

6. Follow up your instructions consistently. See to it that workers make use of the safeguards provided them. If necessary enforce safety rules by disciplinary action. DO NOT fail the Government which has sanctioned these rules of your workers who need them.

7. Set a good example, demonstrate safety in your own work habits and personal conduct. DO NOT appear as a hypocrite in the eyes of your men.

8. Investigate and analyze every accident - however slight - that befalls any of your personnel. Where minor injuries go unheeded, crippling accidents may strike later.

9. Cooperate fully with those in the organization who are actively concerned with employee safety. Their dedicated purpose is to keep your personnel fully able and on the job to cut down the heavy personal toll of accidents.

10. Remember: Not only does accident prevention reduce human suffering and loss, from the practical viewpoint, it is no more than good business. SAFETY, therefore, is one of your prime obligations to the Government, your fellow managers and your fellow men.

NOTE: By leading your personnel into "thinking safety" as well as working safely day by day, you will win their loyal support and cooperation more than you will gain in personal stature. Good men do good work for a good leader.

RADIOACTIVE MATERIALS TRANSPORTATION ACCIDENTS

The Division of Operational Safety, U. S. Atomic Energy Commission, recently completed a new 33-minute black and white, sound lecture film on the subject, "Transportation of Radioactive Materials, Part II, Accident." The film is the second of several planned.

In the film the lecturer points out the "trifling nature" of most accidents involving radioactive materials, demonstrates the supposed "leaking" container, distinguishes between a minor and a major gamma radiation hazard, and discusses airborne radioactivity, contamination, fuel elements, weapons, and radiological assistance.

Organizations outside the AEC who have a need for the film should forward their requests to the Division of Operational Safety, U. S. Atomic Energy Commission, Washington, D. C. 20545.

MOUTH-TO-MOUTH RESUSCITATION TRAINING

Safety Division, Picatinny Arsenal

When the mouth-to-mouth technique was accepted a few years ago as the best method of artificial respiration, teaching it posed problems. The most significant of these was the lack of a method to provide first aid pupils with practical demonstrations.

Picatinny Arsenal contacted many manufacturers of first-aid equipment. The training aids that were found to be available were considered to be ineffective. Three years ago a local safety equipment company helped us solve our chief problem, when it notified us that a Norwegian concern had manufactured a training aid for mouth to mouth artificial respiration.

This training aid, named "Resusci-Annie", is a life-sized mannequin of a blond girl. When it is inflated by air to life size, a trainee can practice mouth-to-mouth resuscitation procedures. The mannequin is so designed that the correct resuscitation technique must be applied to make its chest rise.

At first some individuals were reluctant to apply their mouth to the mannequin after others even though a protective cloth covering was used. They thought its surface might be contaminated and a source of infectious disease. This problem was resolved by the purchase of a fungicide spray. This is applied after each trainee uses the mannequin and it has dispelled the fear of infection.

Further improvements to this training aid that have become available are a gage to show the trainees the actual pressure they are applying mouth-to-mouth and an eye overlay to simulate dilated and contracted eye pupils.

The reaction to this life-like training aid has been favorable. It has stimulated many individuals to volunteer for first-aid training. Its original cost has been amortized many times over through constant usage and the excellent public relations established through its use for first-aid training in local communities.

The problem of training films on artificial respiration and other first-aid training has been resolved by a new series of Army training films. These Department of the Army training aids are available through Army film libraries:

TF 8-2588 - First Aid for Burns

TF 8-2539 - Control of Hemorrhage

TF 8-3021 - Artificial Respiration

TF 8-2292 - Major Wounds and Fractures

TF 8-2582 - Clinical Shock

TF 8-2293 - Everyday Emergencies

TF 8-2524 - Prevention of Cold Injuries

TF 8-2762 - Heat Disorders

TF 8-3485 - Transportation

Photo 1

Photo 2

Photos 1 and 2 show Picatinny Arsenal's life-sized mannequin before and after it is inflated.

Photo 3

Photo 3 shows the gage that will register the mouth-to-mouth pressure applied by the first-aid trainee. The can contains a fungicide that is applied to the mannequin after each student has practiced resuscitation.

MOUTH-TO-MOUTH RESUSCITATION TRAINING PAYS OFF

Instruction in the mouth-to-mouth method of resuscitation, given as part of a Red Cross first aid course at the U. S. Army Biological Laboratories, Fort Detrick, paid off quickly. Charles R. Wisner, a fireman who received the training, responded to a call for help from a neighbor who found her son unconscious on the basement floor. He administered mouth-to-mouth resuscitation until the Fort Detrick ambulance arrived. Wisner said, "I checked for pulse beat and could not determine one. The first few breaths that I breathed in the mouth-to-mouth resuscitation were like blowing at a stone wall. After the fifth or sixth breath, he began to respond." When the ambulance arrived other members of the Fire Department assisted Wisner in his resuscitation effort until portable oxygen equipment was received. An American Red Cross Certificate of Recognition was presented to Wisner (right) for saving the life of Robert Cole, 14 (left).

EXTRANEOUS ELECTRICITY IS CONSTANT EXPLOSIVES HAZARD

Among the prerequisites for safety in explosives operations is the institution of measures to counteract hazards caused by extraneous electricity. The sources of extraneous electricity include, but are not limited to lightning, power transmission lines, galvanic action, electrostatic phenomena, and radio frequency energy from radio, radar, and television transmitters.

A recent explosion during a warhead penetration test operation shows the necessity for careful planning and for procedures that leave nothing to chance.

Light antitank weapon warheads were being tested. The operation layout included an electric firing circuit that ran from a concrete personnel shelter to a barricaded structure, behind which a single warhead was positioned on steel penetration firing plates. An M48 electric detonator was used to initiate the M412 fuze of the warhead. A blasting machine in the personnel shelter was used to fire the warhead. Photo 1 shows the two structures and the electrical wire extending along the ground between them.

Six warheads were tested without mishap. The seventh warhead was placed in position and wired up. The operator returned to the personnel shelter, unlocked the box containing the shunted leads of the electrical firing circuit, removed the shunt, and tested the lead wires for continuity with a galvanometer. An abnormal resistance reading was obtained so the lead wires were again shunted, placed back in the lead wire box and the box was relocked.

The supervisor walked to the barricade to check-out the wiring of the test item. In accordance with the installation's standing operating procedure he took with him the key to the lead wire box and the handle to the blasting machine.

Everything at the warhead site appeared to be normal so supervisor returned to the personnel shelter and again checked the lead wires with the galvanometer. The reading on the galvanometer still was not in the acceptable range. Since only a minute amount of electrical energy is required to fire the M48 detonator, the supervisor decided that the blasting machine should be connected to the firing wires and firing should be attempted. This was done, but the warhead did not fire. Subsequently, the lead wires were re-shunted, then returned to the wire box and the box was locked again.

The standing operating procedure required a thirty-minute wait after a misfire, but the operator and his supervisor immediately left the personnel shelter to inspect the warhead.

When the operator reached the testing barricade, he stooped down and disengaged the firing wire from the lead to the positive side of the fuze. Next, he stood up, and while holding the wire by the insulated surface, away from his body, walked behind the barricade. His supervisor followed and was approximately two feet behind him when the warhead under test exploded.

The operator suffered a compound fracture of his left leg and multiple shrapnel wounds on his legs, abdomen, and chest. The supervisor was uninjured.

Investigation revealed the following possible causes of the explosion:

1. Static electricity. The injured operator was in close proximity to the warhead when it exploded.

2. Cathodic reaction between the steel firing plate and earth. Tests by electrical and electronics personnel indicated an electrical potential of 0.6 volt, and an average current flow of 0.03 milliamps were thus produced. Since the M48 detonator requires only minute amounts (approximately 1,000 ergs) of electrical energy to function, this source of energy also might have initiated the warhead.

Corrective action to prevent recurrence has included the following:

1. The standing operating procedure was changed to require notification of the division chief before inspecting an explosive item after a misfire occurs during testing. This requirement is in addition to the thirty-minute wait already prescribed.

2. All operators who are required to go behind the test barricade whenever there is a loaded item present will wear cover-alls, cotton undergarments, and grounding spurs.

3. Dirt in the barricade area (approximately 20 square feet) was dug out to a depth between three and four feet. The excavated area was filled with about 12 inches of ballast (#5 crushed stone), about 12 inches of #5 washed gravel and sufficient tamped dry sand to bring it to ground level. The entire walkway was dug out and filled in the same manner.

4. The refilled area was tested for stray currents and the results were negative.

5. A grounded steel pathway was laid from the storage location for explosive items and the personnel shelter to the barricade and around to the actual testing site.

6. Final hookup of firing circuit and the loaded item lead wires will be done outside of and behind the barricade. The wires to the loaded items will only be used once and new wires used for each subsequent shot.

7. All leads will remain shunted until removed by the last operator leaving the site when the item to be tested is positioned.

8. A remote retriever for removing the detonator from the warhead was fabricated and installed.

9. A switch box was installed outside of the barricade as a double safety measure to insure that the lead wires are positively shunted during hookup. When the hookup is completed by the last operator to leave the site, he then places the switch in the firing position and returns to the shelter.

Photo 1 - Photo shows concrete personnel shelter and barricade where tests were performed. Note wire on ground between the two locations.

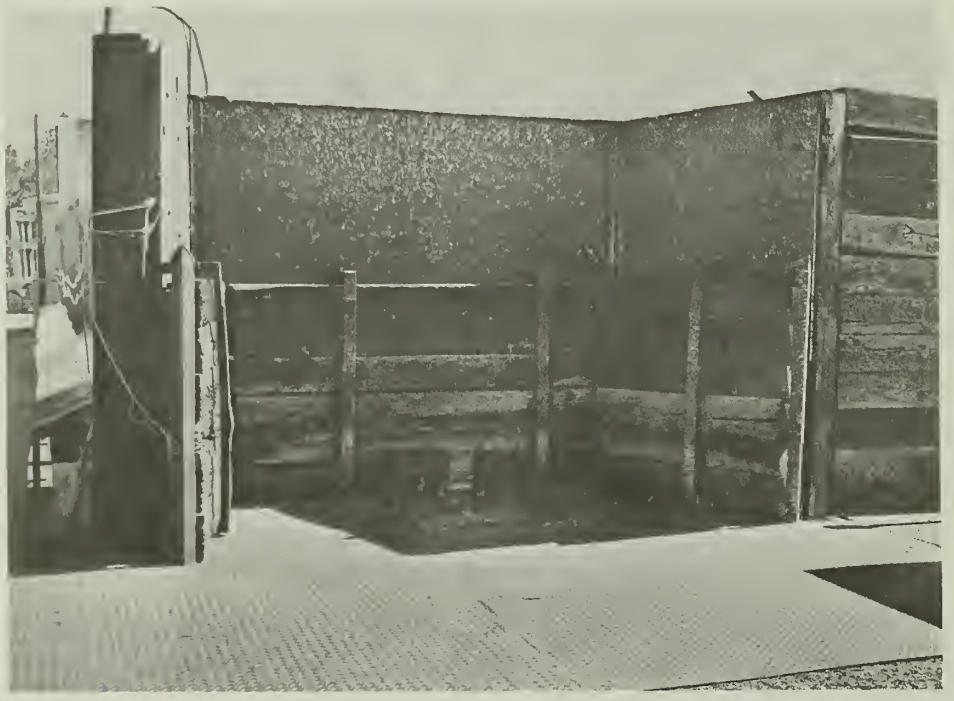


Photo 2 - The interior of the test barricade is shown after its floor had been excavated, refilled with stone and sand, and covered with a steel pathway surface. Note at the left the supports that have been added to keep the wire off the ground between the two structures. The penetration plates are shown in the center.

Photo 3 - Wires are shown off the ground outside the barricade. The metal frame with spool of cord is used to retrieve a detonator from the warhead by remote control.

Photo 4 - The area after measures were taken to improve safety during testing operations.

IN-WALL STORAGE OF EXPLOSIVES

Thomas P. Browne
Supervisory Safety Engineer
U. S. Army Missile Support Command

Development work on new propellants by the Redstone Arsenal Division of Rohm and Haas Company involves the use of a remotely controlled facility for mixing, casting, and curing experimental items. Before the facility was placed in operation, tests were conducted to assure that adequate safety had been engineered into the design and layout of the equipment.

The remote casting facility requires the location of potential explosives within the reach of the mechanical manipulators that are to be used. At the same time it must be possible for personnel to enter the bay between operations without being exposed to these potential explosives. The feasibility of meeting these requirements by storing one-pound lot of material in an open hole cast into a wall and barricaded behind a guillotine-type steel door has been demonstrated with C-4 explosive charges set in a prototype structure.

A 12-inch thick double-reinforced concrete wall, four and one-half feet wide and five feet high (above footing) was erected. The wall contained in its center a section of 18-inch schedule 80 steel pipe. (Photos 1 and 2) This pipe was set in one-half inch of 15 pounds felt and was welded to reinforcing rods in the concrete. Within this pipe a section of 12-inch pipe was mounted concentrically. On one face of the wall a one-inch-thick sliding steel door was installed as shown in Photo #3. The opposite wall face was left open, as shown in Photo #1. Tests were conducted 61 days after the concrete was poured.

Successive shots with one-fourth and one-half pound C-4 charges had no effect other than demolition of the supporting screen and a slight loosening of the door flange. One pound of C-4 buckled the door about two inches at the top and bent the flange, but the door remained in place. The inner pipe sleeve was split and ejected from the opening and came to rest at the foot of the wall. Two pounds of C-4 buckled the door further and deformed the flange, but the assembly still remained in place. The inner liner was hurled out several feet in a number of fragments. The front face of the wall showed severe spalling around the liner and several radial cracks extending from the opening to the edge of the wall. One hairline crack could be followed from the front to the back wall face.

These results indicated that this construction was suitable for storing one-pound quantities of C-4 and its equivalent without significant irrepairable damage. Somewhat larger quantities can be confined but at the cost of the integrity of the wall.

Despite the demonstration of the feasibility of storing explosives within a reinforced concrete wall and behind a steel door, a flash problem remains. High speed motion picture taken during the tests show appreciable flame issuing at nearly every point between the door and flange, even with a one-half-pound charge. Either a seal around the door or a movable safety screen is required.

Photo 1

Photo 2

Photos 1 and 2 show the open and closed sides of the wall used to test the feasibility of in-wall storage of small quantities of explosives. The open side shows a 15-inch pipe mounted inside a section of 18-inch pipe.

Photo 3

Photo 3 provides a close-up of the steel door on the closed side of the wall opening.

MAINTENANCE OF EXPLOSIVES CONTAMINATED EQUIPMENT

A 1965 explosion at an Army Materiel Command plant illustrates how easily an accident may be caused by failure to use proper maintenance techniques.

Operators at the plant detected a leak in a vapor vent line in an explosives processing area. It was determined that a defective gasket was the source of the leak. Two mechanics surveyed the task, observed a rust residue left by the leak, and decided the leak was at a top flange of the vapor vent line located about 12 feet above the floor level.

One mechanic climbed up the ladder, oiled all the bolts twice, and proceeded with his effort to loosen them.

He experienced difficulty with one of the nuts. He pushed on the wrench, and an explosion occurred. A sheet of flame that appeared to be about two feet wide and 12 feet long flashed from between the flanges. The man later reported that the flash lasted but a moment but the heat from it was intense. Three of the eight bolts of the flange connection were severed by the explosion.

The explosion failed to break the mechanic's firm grip on the ladder. He climbed down quickly and with his co-worker (at the foot of the ladder) who had been knocked down by the concussion of the explosion, fled the building by way of a safety chute.

The man who had been on the ladder required an operation to remove a foreign body embedded in his chest. He was treated also for flash burns on one side of his face and skin abrasions caused by flying fragments. Both men reported damage to their eardrums.

The explosion was attributed to explosive contamination that had been present in the residue from the leak. This residue had not been properly removed before the mechanics proceeded with their work. Insufficient time had been allowed for the penetrating oil to penetrate the bolt threads. The vent line had not been purged of flammable vapors. The combination of friction, heat, and an explosive produced the blast.

Full compliance with the standing operating procedures is particularly necessary for the safe performance of maintenance work on explosives contaminated equipment.

COUNTDOWN FOR A SAFE HOLIDAY

Carefully planned and well-executed holiday safety campaigns have helped prevent off-duty accidents and injuries to Army and civilian personnel and their families at the U. S. Army Missile Support Command, Redstone Arsenal, Alabama.

The following information, extracted from two of the documents used in its 1964 campaign for a safe Christmas season, suggests the extent of detailed planning required to achieve success. In it you may find ideas that will help you plan your holiday safety campaign or improve the one you have used. Many of the Missile Support Command's suggestions for Christmas safety can be adapted to other holiday weekends.

Briefing Guide for Campaign Coordinators

1. The campaign theme is "COUNTDOWN" for a Safe Holiday Season. Repeated reference should be made to the theme in all contacts with your personnel to create and sustain this image. Also, all promotional media, hand-outs, letters, etc., created within your organization should be associated with the theme.

2. Immediate action should be taken to select personnel within the operating segments of your organization to assist in the distribution of basic material, putting up posters, conducting safety briefings, etc.

3. Distribution - Basic Material

a. "COUNTDOWN" booklet is to be distributed, one each employee, two weeks before the pertinent holiday. As much as possible, this should be accomplished in groups. A campaign representative should discuss briefly the "COUNTDOWN" procedures prior to passing out the booklets and should appeal to group members for their co-operation to observe the safe measures listed to insure a safe holiday season. Also, re-emphasize and encourage individual ideas for making the campaign more effective.

b. Eleven days prior to holiday, put up strip posters, "Let's all have a wreck-less holiday"; -- "Plan a safe one before"; and "Drive that others may live", in prominent locations. Due to the limited number of the large posters, recommend thought be given to locating these where they may be observed by the maximum number of employees.

4. Follow suggested procedures in "COUNTDOWN" during the remainder of the campaign.

5. Three days after the holiday, no later than 1000 hours, furnish the Safety Division a telephonic report of the accident experience of your organization for the holiday period consistent with available information. Negative reports are desired. Numbers to call are: (List).

6. Seven days after the holiday, repeat request in paragraph 5 above. /

7. During the campaign, whenever additional information or assistance from the Safety Division is required call any of the numbers listed in paragraph 5.

"COUNTDOWN" Booklet

10. At 0800 hours, twelve days before holiday: FAMILY STAFF MEETING - Call a family "get-together" to plan a safe holiday season. Discuss how an accident could spoil the occasion for all concerned. Use "countdown" to guide discussion. Assign family member responsibility, as appropriate, to carry out countdown procedures: for example, selection of Christmas tree and decorations, all of which should be flame retardant; safety and fire inspection of home; vehicle safety check; electrical appliances; routes of travel; travel schedules; weather conditions; etc. If no family, get together with friends, associates, or as an individual, discuss, think, and plan to observe applicable measures for making this a safe holiday season.

9. Eleventh and tenth day: ALL PERSONNEL - Think, imagine, create, develop ideas to stimulate interest, associate thought, sell, promote the campaign within respective organizations, departments, units, etc.

8. Ninth day: ALL PERSONNEL - Turn in your ideas to the holiday safety campaign co-ordinator for your organization. (Name will be announced) Tell and show him your ideas, and offer assistance in application of ideas where appropriate.

7. Eighth day: CAMPAIGN CO-ORDINATORS - Screen ideas of employees, plus your own. Select ideas deemed appropriate for application. Take action to put them into effect. Retain copies or other descriptive information to include in after-action report.

6. Seventh day: CAMPAIGN CO-ORDINATORS - Continue to pursue promotional ideas. Plan series of film showings during the pre-holiday period. Make schedules as flexible as possible to permit firm booking consistent with availability and utilization of film. Telephone film request to Safety Division, (telephone numbers).

5. Sixth day: CAMPAIGN CO-ORDINATORS - Show film where requests have been confirmed. Talk holiday safety on individual basis when appropriate. Remind all personnel to observe "countdown" procedures four and three.

4. Fifth day: ALL CONCERNED - Safety check vehicle. This is to your advantage whether you're driving a long trip or around your home area. FOOT BRAKE - Be sure of one inch or more space between pedal and floor board when brakes are fully depressed. Check hand brake. FRONT LIGHTS - Check high and low beams, parking and turn signal lights. Insure bulbs are operational. REAR LIGHTS - Be sure that license plate, fender, stop, backup, and directional lights are in working order. STEERING - Observe for excessive play by back and forth turning of steering wheel. Check for loose tie-rod couplings, wheel alignment, and broken springs. TIRES - Check treads and sidewalls for wear, cuts, and proper inflation. EXHAUST SYSTEM - Check muffler and tail pipes for leaks, cracks. Look for rusted or worn spots under floor mats, front and rear seat area, or firewall and back of instrument panel, and floor of trunk. Carbon monoxide even in small concentrations can affect driving performance and contribute to the cause of an accident. WINDSHIELD WIPER - Check for operation, and for worn rubbers. Throw water on windshield, test to determine performance. GLASS - REARVIEW MIRROR - HORN - Check for operable condition, cracks, blind spots, vibration, sound, etc. Correct discrepancies either by "do it yourself" or automotive services.

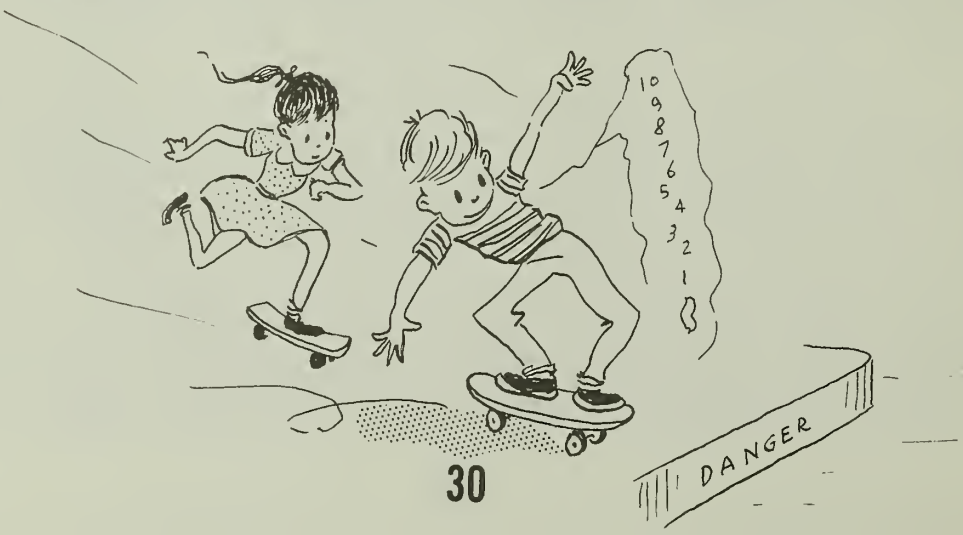
3. Fourth day: SAFETY INSPECTION - Assign individual responsibilities to inspect your home. Check basement, closets, attic, storerooms, garages, kitchen, bedrooms, den, living room, elsewhere for unnecessary papers, rubbish, flammable materials, other combustibles which could easily cause fire. Dispose, correct as appropriate. Check for loose rugs, carpets, electrical cords, steps, stairs, other hazards which cause trips, slips, and falls. Heating equipment safe? Portable stoves located away from window curtains, beds, and insulated between stove and floor? Stove oven, no danger of grease fire during increased use?

Check medicine cabinets and under sink area for old razor blades, medicines, detergents, and what have you which the "small fry" can get a hold of and put to wrong use. Remember normal supervision, and observation will decrease during the holiday period. Make everything safe ahead of time.

2. Third day: SAFETY CO-ORDINATORS - Insure dispatch of safety message from chiefs or organizations to personnel. Prepare notes for "last hour" briefing of personnel. Show film where scheduled. Continue to discuss holiday safety on individual basis, motivate through other media as appropriate.

1. Second day: ALL PERSONNEL - During the evening hours go over final plans for holiday activities. Should plans include extensive travel by private vehicle, give serious thought to amount of driving per day. Avoid night driving to the fullest extent. Verify weather conditions. Don't overlook chains if you're heading into an area apt to be snowy and icy. Adjust your travel to rainy and slippery conditions. Don't forget to include in your plan that telephone call or telegram to loved ones, sweetheart, or friends whom you're going to visit, should you be seriously delayed en route. Their worry over you might cause them to have an accident and spoil a happy holiday. Review the safety tips above for increasing your odds against an accident.

0. First day: You're off and zero accidents is what we all hope for --- and the chance to enjoy a no-accident experience is exceedingly great IF we observe these "COUNTDOWN" procedures and make CARE, CAUTION, and COURTESY our code for the holiday season. Good luck and may God bless one and all.



"FALLS" IS LEADING AMC INJURY CAUSE

Safety and supervisory personnel who are striving to improve their accident prevention programs may be giving too little attention to the common fall.

Year after year "falls" is the leading cause of injuries to Army Materiel Command personnel.

The following paragraphs contain observations resulting from a review of all Army Materiel Command falls reported on DA Forms 285 during a six-month period. They deserve careful consideration by every supervisor and all personnel, because every person in the Army Materiel Command is exposed to hazards that may cause falls and injuries.

1. Over one-fifth of the AMC accidental disabling injuries were caused by falls.

2. The percentage of falls as a part of the AMC injury total varies very little from year to year.

3. "Falls" is the leading cause of injuries to AMC personnel throughout the year.

4. Within AMC, falls cause over twice as many injuries to men as to women. This appears to be logical, considering the large number of male personnel and the fact that they perform most tasks that involve climbing on elevated surfaces.

5. Sedentary workers are particularly likely to be victims of falls. During the period studied, most of the injured women (and many of the men) were office workers.

6. Age appears to be a factor. The average age of the men injured in falls was 51. The average age of the women was 49.

7. Almost one-half (40 out of 85) of the falls were at the same level. A tumble on an icy spot in the parking lots is an example of a same level fall.

8. More women than men were injured in same level falls and office workers exceeded the total of all other groups.

9. The most common activity at the time all falls occurred was walking on the ground or the floor of a building.

10. The second most common activity was working on or about elevated surfaces. This alone equaled all the remaining activities at the time the remaining falls happened.

11. During the period studied one man died as a result of a fall.

12. The disabling injuries reported during six months included 44 fractured bones; 22 lacerations, bruises, and contusions; 14 strains and sprains; three abrasions; and one dislocation.

13. Time lost from work was estimated on the reports at 1,955 days. (No data is available on injuries received in off-duty falls and their cost in sick leave.)

14. The cost of the injuries received from falls during the half year studied was $129,370. The average cost estimates contained in DA Circular 385-5 were used to compute this figure.

Perhaps the clearest information revealed by the study is that the falls are so extremely common and that the injuries are so often disabling.

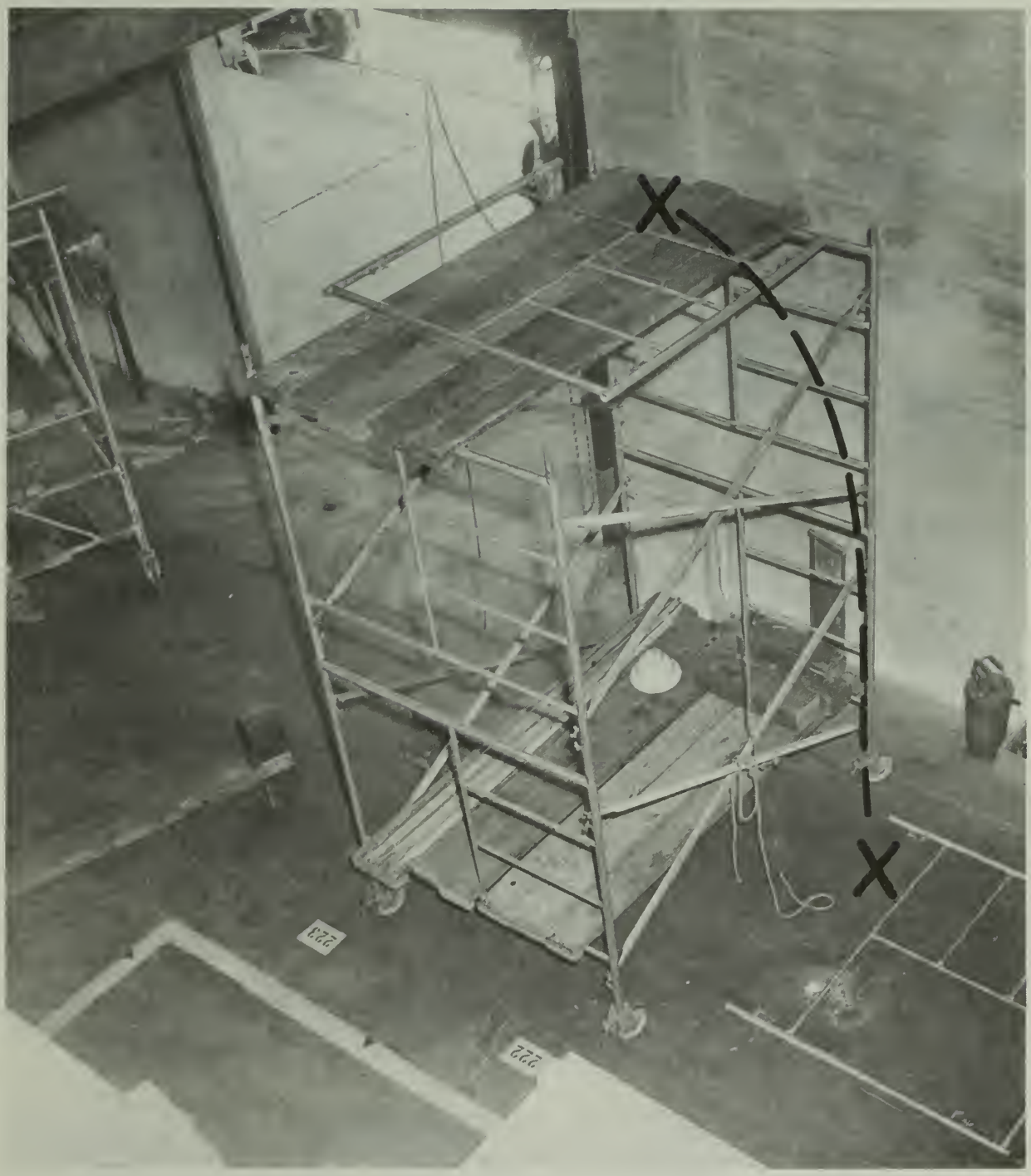
Three general conclusions appear to be supported by the study:

a. Insufficient efforts are being made to prevent the occurrence of falls.

b. Particular emphasis should be given to the prevention of falls by office personnel.

c. The prevention of falls should be emphasized in a continuous promotional program in every headquarters, installation, and activity.

By their number and nature, falls offer a challenge and an opportunity to commanders, supervisors, and safety personnel. No startling, revolutionary action is going to prevent falls and their resulting one-fifth of the injury total. They can be prevented only by more effort being applied to the old, recognized safety measures. Unless every person is made to care, and to work to prevent their occurrence, the injury toll from falls will continue at a steady pace month after month and year after year.



An employee at an AMC installation died from an injury he received when he fell backward from the platform shown above. He was helping with dismantling of the platform when the accident occurred. Although work on elevated surfaces without adequate safety precautions is hazardous, walking on the floor or the ground is the most frequent activity engaged in at the time disabling injuries are received in falls.

In order to solve the widely varied problems constantly encountered, safety personnel at the Army Materiel Command installations and activities must make use of a vast store of knowledge. Their most complete source of authoritative specialized information is AMCR 385-224, the AMC Safety Manual. Here are ten questions with which you can check your knowledge of the requirements of this publication. The correct answers and references appear on page 42.

1. At what distance must grounding electrodes, used as a part of a lightning protection system, be set from a building?

Answer & Reference:

2. Is there any requirement that operators of materials handling equipment be given a physical examination?

Answer & Reference:

3. Who may approve the use of empty magazines as the work site for the performance of normal maintenance of ammunition and in some cases its modification and renovation?

Answer & Reference:

4. When an electric motor is to be used in an atmosphere that may contain ethyl ether vapors, what type of test must it meet?

Answer & Reference:

5. What is the maximum allowable resistance in ohms when conductive safety shoes are tested on the feet of the wearer?

Answer & Reference:

6. What is the maximum angle that should be permitted between the leg of a sling and the vertical?

Answer & Reference:

7. May loose rounds of ammunition be stored in magazines containing ammunition items which are packed in accordance with approved drawings?

Answer & Reference:

8. What temperature, over what period of time is considered critical in storage magazines?

Answer & Reference:

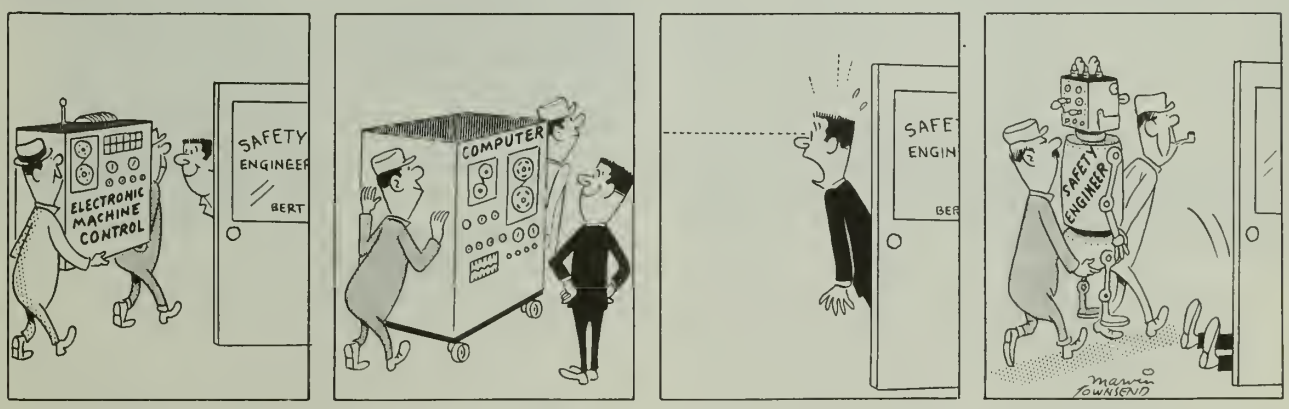
9. How many quantity-distance hazard classes were established by Change 12 to Section 17, AMCR 385-224?

Answer & Reference:

10. In an explosives manufacturing area, is it necessary to have a water supply for fire fighting available from more than one source?

Answer & Reference

BERT



AMC installations listed below have been notified that the National Safety Council has recognized their safety programs with appropriate safety awards.

New Cumberland Army Depot was awarded the NSC Award of Merit for achieving 1,030,667 manhours without a disabling injury from 1 September 1964 to 31 December 1964.

Rocky Mountain Arsenal worked 1,550,517 manhours without a disabling injury from 18 July 1964 to 20 February 1965 for which a NSC Award of Merit will be received.

Anniston Army Depot was notified that it has qualified for a NSC Award of Merit for operating 1,598,564 manhours without a disabling injury from 20 November 1964 to 24 February 1965.

Atlanta Army Depot was advised that a NSC Award of Merit will be forwarded as a result of its fine safety performance and operating 2,001,921 manhours without a disabling injury from 22 October 1964 to 12 February 1965.

Tooele Army Depot will receive a NSC Award of Merit in recognition of operating 1,260,002 manhours without a disabling injury from 1 January 1965 to 17 February 1965.

Schenectady Army Depot has qualified for a NSC Award of Merit for operating 1,040,216 manhours without a disabling injury from 17 November 1964 to 30 April 1965.

AMC SAFETY AWARD PRESENTATIONS

Lt. General Jean E. Engler, CG, U.S. Army Supply and Maintenance Command, and Col. George P. Holm, Depot Commander, are shown with the NSC Award of Honor earned by Tooele Army Depot personnel for operating a record high 4,362,637 man-hours without a disabling injury. General Engler presented the plaque to Col. Holm at a dinner attended by Depot military and key civilians, nearby military installation commanders, civic leaders, and their ladies.

Major General Floyd A. Hansen (left), Commanding General of the U.S. Army Munitions Command is shown presenting the AMC Award of Merit to Col. Homer G. Barber, Commander of the Ammunition Procurement and Supply Agency. The agency received the award in recognition of the FY1964 safety record of its 24 ammunition plants.

Sierra Army Depot won the Army Materiel Command Award of Honor for the Best safety program within the U.S. Army Supply and Maintenance Command during FY1964. Brig. General Raymond C. Conroy (left), Commanding General of the U.S. Army Terminal Command, Pacific, presented the award to Col. Harvey Bower (right), Sierra's Commanding Officer. E.E. Crain, Safety Director, holds the National Safety Council Award of Honor the depot also received for its outstanding FY 1964 record.

During ceremony at the Brooklyn Army Terminal, Brig. Gen. A.J. Montgomery, Commanding General, U.S. Army Terminal Command, Atlantic, (USATCA) accepts two safety awards earned by his command during 1964. Alfred Barden, Safety Director, USATCA (center) holds the National Safety Council's Award of Merit for Safety and Lt. Col. J.M. Van Dyke, Director for Administration, USATCA, holds the U.S. Army Materiel Command's Award of Merit for Safety.

The awards cited the reduction of accidents by 26% during this period.

The U.S. Army Ballistics Research Laboratories received an AMC Award of Merit for its FY 1964 Safety accomplishments. Col John A. Ord (left), of the AMC Research Division, presented the award to Mr. H. Buchanan, BRL Safety Officer, and Col. Charles D. Y. Ostrom, Jr., Commander of the Ballistics Research Laboratories.

Col. Edward R. Ardery, AMC Headquarters, is shown commending Lt. Col. Joseph E. Black, Commanding Officer, AMRA and the Industrial Health and Safety Committee (pictured above). As a result of the superior achievements of AMRA's personnel, and contributions of the Watertown Safety Office, AMRA received the AMC Award of Merit for FY 1964, the NSC Award of Honor for FY 1964, and the NSC Award of Merit for achieving 1.5 million man-hours without a disabling injury.

Springfield Armory has won a National Safety Council Award of Honor for its achievement of 3,406,968 man-hours of operation without a disabling injury. The award was presented to Col. William J. Durrenberger, Commanding Officer, by Victor Mari, Executive Director of the Western Massachusetts Safety Council. Lyman E. Pevey, Armory Safety Director, is shown at right.

The Holston Army Ammunition Plant has received the Army Materiel Command Award of Merit for Safety for the second successive year. The FY 1964 award was presented by Col. O.G. Miller, Deputy Commander, Ammunition Procurement and Supply Agency to Major Harry R. Bailey, Commanding Officer, and Werner H. Zugschwerdt, Plant Manager for the Holston Defense Corporation (contractor). Shown in the second row are R.R. Royall, Safety Director and E.D. Helms, Director of Safety and Plant Protection for the contractor In a separate ceremony John Bearden (not shown), President of the Kingsport, Tennessee, Safety Council presented a National Safety Council Award of Merit for the plant's FY1964 safety program.

The Lone Star Army Ammunition Plant recently received its fifth National Safety Council award. The 1964 record of the installation earned it the NSC Award of Merit. The award was presented to the installation personnel by William R. Moseley, vice president of Day & Zimmermann, Inc., operating contractor. Shown at the awards ceremony (l. to r.) are James W. Graves, Chief, Safety Division; Major Duane W. Harris, Commanding Officer; Roy Templeton, Plant Manager; Charles R. Goff, the contractor's Director of Safety and Plant Protection; Mr. Moseley; James R. Brown, the Commander's Executive Assistant; and Thomas Blount, Chief of the Engineering Division, Ammunition Procurement and Supply Agency.

Colonel Douglas M. Livingston, Commanding Officer, Sacramento Army Depot, left, presents the Depot's 1964 General Supply Division Safety Award to Mel Berger, Chief, Receiving Branch, General Supply Division at an annual safety ceremony held on 25 February, at the installation.

Louisiana Army Ammunition Plant won an Army Materiel Command Award of Merit for its FY1964 safety program. Colonel O.G. Miller (left), Deputy Commander of the U.S. Army Ammunition Procurement and Supply Agency, presented the award to the installation's Commanding Officer, Major J.T. McGuffie (right) and T.L. Gaines, General Manager at the plant for the Sperry Rand Corporation.

The Louisiana Army Ammunition Plant has received the National Safety Council Award of Merit for operating 2,277,777 man-hours without a disabling injury from 20 March 1964 to 1 January 1965. The award was presented by Lee Smith, President of the Ark-La-Tex Chapter, American Society of Safety Engineers to Major J.T. McGuffie, Commanding Officer and T.L. Gaines, General Manager for Sperry Rand Corporation, contractor operator. The presentation ceremony was attended by representatives of the employees who earned the award by their safe work.

REFERENCE PUBLICATIONS

AR 95-1, Change 1, 28 April 1965
Aviation, Army Aviation - General Provisions

AR 385-40, Change 2, 3 May 1965
Safety, Accident Reporting and Records

AR 385-65, 28 April 1965
Safety, Identification of Inert Ammunition and Ammunition Components

AR 420-90, 2 July 1958 - Change 1, 20 February 1961
Repairs and Utilities, Fire Prevention and Protection

AR 715-30, 17 March 1965
Procurement, Local Purchase of Civilian Type Items

DA Cir. 385-6, 31 March 1965
Safety, Driver Safety Education Course

DA Cir. 385-7, 5 April 1965
Safety, Safety Training in Civilian Institutions

DA Cir. 385-8, 12 April 1965
Safety, Safe Operation of Truck, Utility, 1/4 Ton, 4X4, M151

DA Cir. 420-9, 5 April 1965
Repairs and Utilities, Safety Control Wiring for Boilers

DA Cir. 611-19, 17 March 1965
Personnel Selection and Classification, Revision of Army Personnel Tests

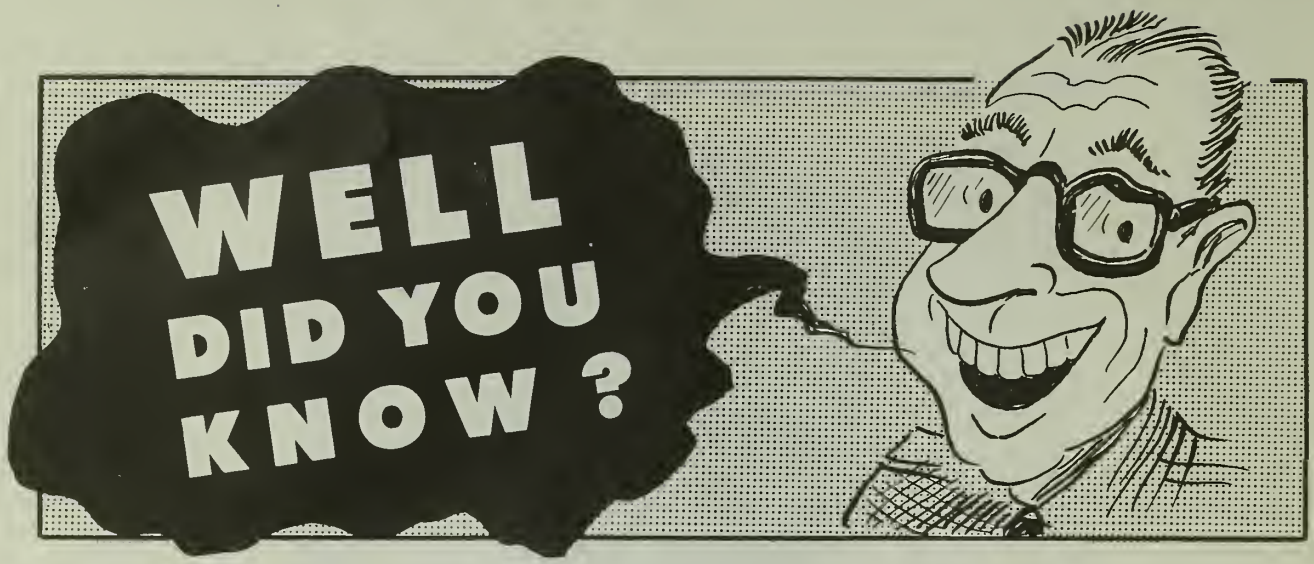
DA Cir. 700-4, 5 May 1965
Logistics, Radioactive Coating Compound

FORT DETRICK SAFETY MAN EARNS DOCTORATE

G. Briggs Phillips, Assistant Director, Industrial Health and Safety Division, Fort Detrick, Maryland, has been awarded a Doctor of Philosophy degree in Safety Education by the New York University Center for Safety Education. The award is one of only three in safety that have been earned by civilian employees of the U. S. Army, and Dr. Phillips is the first to earn the degree while so employed.

Dr. Phillips began work on his doctorate in June 1960. He alternated time spent in residence at the University with work periods at Fort Detrick. The research requirements for his thesis were met at Fort Detrick.

Dr. Phillips was first assigned to the Safety Division at Fort Detrick in 1944, when he was a member of the Armed Forces. He remained there after his separation from the service in 1946, and he earned his first degree, a Bachelor of Science in Bacteriology from the University of Maryland, in 1954. His long training and experience in microbiological laboratory safety has enabled him to help the U. S. Army Biological Laboratories achieve an enviable safety record.



Here are the answers to the questions on pages 34 and 35. All questions were based on information contained in AMCR 385-224. A reference to the pertinent paragraph follows each answer.

1. Grounding electrodes shall be set not less than three feet, nor more than eight feet from the structure. Reference: Paragraph 803g.

2. Operators of powered materials handling equipment should undergo an examination to eliminate those physically unfit for this type of work. Reference: Paragraph 2410.

3. Commanding General, U. S. Army Materiel Command. Reference: Paragraph 2502c.

5. 250,000 ohms for shoes in parallel connections, 1,000,000 ohms for shoes in series connections. Reference: Figure 706A, page 7-6.

4. Electrical equipment selected for use under this condition must meet Underwriters' Laboratories tests for safety of operation in Class I, Group C atmospheres. Reference: Paragraph 603e(3)(a)3.

6. Slings should always be used at as small an angle as possible since increasing the angle between the leg of the sling and the vertical greatly increases the stress in each leg. Their angle should never be greater than 45°. Reference: Paragraph 910.

7. Loose rounds should be stored in magazines set aside for their exclusive storage. Reference: Paragraph 1808.

8. 100°F. for a period of more than 24 hours. Reference: Paragraph 1805.

9. Eight. Reference: Change 12 to Section 17, dated 9 November 1964.

10. Yes. A water supply for fire fighting in such areas shall be from two sources. Reference: Paragraph 1225a.

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